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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/723,540	11/27/2000	Bernd Michaelis	000432	6401

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EXAMINER	
STREGE, JOHN B	
ART UNIT	PAPER NUMBER
2624	

SHORTENED STATUTORY PERIOD OF RESPONSE	MAIL DATE	DELIVERY MODE
3 MONTHS	02/20/2007	PAPER

Please find below and/or attached an Office communication concerning this application or proceeding.

If NO period for reply is specified above, the maximum statutory period will apply and will expire 6 MONTHS from the mailing date of this communication.

Office Action Summary	Application No.	Applicant(s)	
	09/723,540	MICHAELIS ET AL.	
	Examiner	Art Unit	
	John B. Strege	2624	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *27 February 2006*.

2a)☒ This action is **FINAL**. 2b)☐ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-10* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-6 and 8-10* is/are rejected.

7)☒ Claim(s) *7* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☒ The drawing(s) filed on *27 November 2000* is/are: a)☒ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☒ All b)☐ Some * c)☐ None of:

1.☒ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application
6) ☐ Other: _____.

Response to Amendment

1. The amendment received 2/27/06 has been entered in full. Due to the amendment of claim 5 the USC 112 rejection has been withdrawn.

Response to Arguments

2. Applicant's arguments filed 2/27/06 have been fully considered but they are not persuasive. Specifically the applicant argues that neither Goto nor the other references relate to image correction in the sense of correcting the optical defects (i.e. differences between the real object imaged versus the digital image generated by the device) of imaging devices. The Examiner respectfully disagrees with this statement. As stated in the previous office action Goto relates to a color correcting device for color correcting input data which are differences between the real object imaged versus the digital image generated by the device (col. 2 lines 18-23). This reads as well on the amended limitation of "said errors being deviations between an image of predetermined quality and its reproduction, such errors being caused by defects in the image reproduction system". The applicant then goes on to discuss the distinctiveness of the invention on pages 7-9 such as the defects are generated in rear projection display devices, etc., however none of this is in the claim language and therefore these arguments are irrelevant to the claimed invention. Thus the rejections of the previous office action are maintained, and the additional limitations added that do not distinguish over the prior art will be pointed out in the rejection below.

Claim Rejections - 35 USC § 102

3. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless –
>
> (b) the invention was patented or described in a printed publication in this or a foreign country or in public use or on sale in this country, more than one year prior to the date of application for patent in the United States.

4. Claim 1 is rejected under 35 U.S.C. 102(b) as being anticipated by Goto US Patent 5,774,230.

Claim 1 discloses "a method of defining and at least partially correcting errors of an image reproduction system, said errors being deviations between an image of predetermined quality and its reproduction, such errors being caused by defects in the image reproduction system" Goto discloses a color image reproduction system that corrects the color signals of a reproduced image in order to maximize the correlation between an original and a copied image (Fig. 6) (as stated at least in the abstract and col. 1 lines 6-9, and col. 2 lines 18-23). Goto discloses that when reproducing a color image there is a problem that it hardly renders exactly the same colors as those of the original image even when input image data are supplied to the output means intact (col. 1 lines 17-20). This is a type of error caused by deviations between an image of predetermined quality and its reproduction which is caused by defects in the reproduction system (they are defects because they can not accurately reproduce the colors). To overcome this problem Goto discloses correcting these errors (col. 2 lines 18-23).

Claim 1 further discloses that the method comprises "determining the parameters of a neuronal net by a learning process utilizing a test image of predetermined quality as a learning pattern." Goto discloses a neural network that uses a scanned image of predetermined quality to enable the neural network to learn (S7 and S8 of Fig. 2)(as stated at least in col. 4 lines 61-65).

Claim 1 further recites " feeding data representative of an image to be reproduced to the neuronal net for processing in accordance with the parameters." Goto discloses that the neural network receives a signal of an original image and converts it into a color-corrected signal in a manner to approximate the colors of the copy image to those of the original image (Fig.1) (col. 3 lines 43-49).

Finally claim 1 discloses, "operating an image forming device on the basis of the data processed by the neuronal net." Goto disclose an output device (3 Fig. 1) that reproduces the original image on the basis of the color correction device that contains the neural net discussed above (2 Fig.1).

Claim Rejections - 35 USC § 103

5. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

6. Claim 2 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goto in view of Bush US Patent 6119112.

Claim 2 discloses "the method of claim 1, wherein the neuronal net is implemented in a computer." As discussed above Goto provides for the limitations of claim 1.

Goto does not explicitly state the use of a computer in order to implement the neural network, however he makes no reference to how the network is implemented so it is inherent that any of the methods that are well known in the art to implement a neural net could be used. It is logical to use computer with the invention of Goto in order to implement the neural network used to color correct an image since all of the inputs and outputs connecting to the device using the neural net are part of a computer system. The color-correcting device 2 (Fig. 1) that is equipped with the neural network (col. 3 line 43) is connected to a memory unit 4 (col.3 line 50), a color scanner input device 1 (col. 4 lines 61-63), and a color printer output device 3 (col.5 line 24).

Bush discloses an invention that utilizes a neural network. He explicitly states that neural networks can be implemented in any way, for example a software implementation.

Goto and Bush are analogous art because they are from the same field of endeavor of using neural networks.

At the time of the invention it would have been obvious to combine Goto and Gaborski in order to implement a neural net using a computer. The motivation for doing so would be that a large number of neural network applications are done using software

so it would be a readily accessible medium, and it would allow the method to be used in a myriad of applications.

7. Claim 3 is rejected under 35 U.S.C. 103(a) as being unpatentable over Goto US Patent 5774230 in view of Gaborski US Patent 5052043.

Claim 3 discloses "the method of claim 1, wherein the neuronal net is implemented in an application specific circuit." As discussed above Goto provides for the limitations of claim 1.

Goto does not explicitly state the use of an application specific circuit in order to implement the neural network, however he makes no reference to how the network is implemented so it is inherent that any of the methods that are well known in the art to implement a neural net could be used.

Gaborski disclose an invention that utilizes a neural network. He explicitly states, "an entire network of neurons can be formed using a specialized digital circuit, such as an appropriate application specific integrated circuit (ASIC) (col. 18 lines 43-45).

Goto and Gaborski are analogous art because they are from the same field of endeavor of using neural networks.

At the time of the invention it would have been obvious to combine Goto and Gaborski in order to implement a neural net with an ASIC. The motivation for doing so would be to allow the invention to be utilized for hardware applications in addition to software.

8. Claims 4 and 5 are rejected under 35 U.S.C. 103(a) as being unpatentable over Goto US Patent 5774230 in view of Eouzan et al US Patent 5231481 (hereinafter Eouzan). Claim 4 discloses "the method of claim 1, wherein the neuronal net is trained by data derived from an uncorrected digitized test image provided by the image forming device and wherein the target data is derived from digitized data of the original image to be reproduced." As discussed above Goto discloses all of the limitations of Claim 1. It further states "the neural network receives a RGB signal of an original image and converts the same into a color-corrected CMY signal of a copy image in such a manner to approximate the colors of the copy image to those of the original image" (col. 3 lines 45-47).

Goto does not explicitly state that the digitized image to be reproduced is an uncorrected image derived from the image-forming device.

Eouzan discloses a method of correcting a projected image by using a camera to take an uncorrected digitized test image derived from the projector image and processing it in order to correct the image (col. 2 lines 41-46).

Goto and Eouzan are analogous art because they are from the same field of endeavor of correcting image data.

At the time of the invention it would have been obvious to someone skilled in the art to combine Goto with Eouzan by capturing an image to be corrected and feeding it to a neural net for correction. The motivation for doing so would be to create a system which corrects the coloring of an output image forming device utilizing the efficiency and

accuracy of a neural network in order to better reproduce the desired color of the original image.

Claim 5 discloses "the method of claim 1, wherein the parameters of the neuronal net are values derived from an image forming system the quality of image formation of which corresponds to the image forming quality of the image forming system to be corrected if the errors to be corrected are larger than device by device variances of the image defects to be corrected." With regard to claim 5 Eouzan discloses "the use of a video camera having a resolution that is as high as the projected image" (col. 6 lines 13-15).

9. Claim 6 is rejected under U.S.C. 103(a) as being unpatentable over Goto in view of the publication "An Artificial Neural Network for Real-Time Image Restoration." By Krell et al (hereinafter Krell).

Claim 6 discloses "the method of claim 1, wherein the neuronal net is a mono-layered one of linear transfer function." Goto discloses the limitations of Claim 1 as discussed in the 102 rejection above.

Goto does not disclose that the neural network is a mono-layered one of linear transfer function.

Krell discloses "forming an array of restoring neurons to a single-layer neural network results in the correcting spatial filter as shown in Fig. 5a" (third paragraph of section II. The Correcting ANN).

Goto and Krell are analogous art because they are from the same field of endeavor of neural networks.

At the time of the invention it would have been obvious to combine Goto and Krell in order to make a neural network that processed faster.

Furthermore, At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to use a mono-layered linear transfer function neural net. Applicant has not disclosed that using a mono-layered linear transfer function neural net provides an advantage, is used for a particular purpose, or solves a stated problem. One of ordinary skill in the art, furthermore, would have expected Applicant's invention to perform equally well with a mono-layered linear transfer function neural net because it would make the processing time faster.

Therefore it would have been obvious to one of ordinary skill in this art to modify Goto to obtain the invention as specified in claim 6.

10. Claim 8, 9, and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakano US Patent 5506696 in view of Eouzan et al US Patent 5052043 (hereinafter Eouzan).

Claim 8 discloses "An apparatus for correcting image forming data, comprising: a neuronal net implemented on a predetermined circuit and comprising parameters established by a learning process on the basis of a test image of predetermined quality." Nakano discloses an apparatus for correcting color image data in order to reproduce an image (col. 3 lines 17-20) comprising a neural network implemented on a circuit (col. 15

line 42) that uses L.a.b. signals derived from the a test image in the learning process (as can be seen in Fig. 2) (col. 9 lines 5-10).

Claim 8 further discloses, "the output neurons of the neuronal net being connected to the inputs the picture elements of an image forming device." Nakano clearly illustrates the output neurons of the neural net being connected to various image output devices in Figures 6 and 9. Furthermore he states that the converted color signal from the neural net is sent to the image output means to output a color image of the object to be reproduced therefore it must be connected to the picture elements."

Claim 8 further discloses, "a storage for image data to be reproduced and connected and feeding the pixel values to the inputs of the neuronal net." In figures 8 and 9 Nakano discloses a memory section 14 which is clearly connected to the inputs of the neural net and feeds pixel values to the neural net, and stores data related to the image to be reproduced (col.9 lines 36-45).

Claim 8 also discloses, "an image recording device for generating digital date of an uncorrected image of a test image provided by the image forming device and connected to the inputs of the neuronal net during the learning process for defining the parameters." Nakano discloses a colorimetry device (2 Fig. 2) that generates L.a.b signals from a color image to be reproduced (col. 3 lines 45-50). Furthermore it can be seen in Fig. 2 that these signals are connected to the neuronal net and Nakano discloses learning controls means for controlling the neural network to learn form the conversion means (col. 3 lines 33-38).

Nakano does not explicitly state that the image-forming device provides the test image, although it would be justifiable to use this in order to create a type of feedback to correct an image that is displayed on a projector or similar device.

Eouzan discloses a method of correcting a projected image by using a camera to take an uncorrected digitized test image derived from the projector image and processing it in order to correct the image (col. 2 lines 41-46).

Nakano and Eouzan are analogous art because they are from the same field of endeavor of correcting image data.

At the time of the invention it would have been obvious to someone skilled in the art to combine Nakano with Eouzan by capturing an image to be corrected and feeding it to a neural net for correction. The motivation for doing so would be to create a system which corrects the coloring of an output image forming device utilizing the efficiency and accuracy of a neural network in order to better reproduce the desired color of the original image.

Claim 9 discloses, "The apparatus of claim 8, wherein the image recording device is connected to the inputs of the neuronal net through an image data storage." Claim 9 is similarly rejected using the same argument as discussed above.

Claim 10 discloses, "The apparatus of claim 8, wherein the image forming quality of the image recording device is superior to the image reproducing quality of the image reproducing device."

At the time the invention was made, it would have been obvious to a person of ordinary skill in the art to have the forming quality of an image recording device be

superior to that of the image reproducing quality. The motivation for doing this would be to compensate for the loss of quality when making a reproduced image from an original.

Allowable Subject Matter

11. Claim 7 is objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

THIS ACTION IS MADE FINAL. Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the mailing date of this final action.

Conclusion

Any inquiry concerning this communication or earlier communications from the examiner should be directed to John B. Strege whose telephone number is (571) 272-

7457. The examiner can normally be reached on Monday-Friday between the hours of 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Bhavesh Mehta can be reached on (571) 272-7453. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free). If you would like assistance from a USPTO Customer Service Representative or access to the automated information system, call 800-786-9199 (IN USA OR CANADA) or 571-272-1000.

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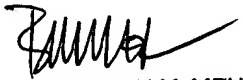

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